EXPERIMENT NO. 8

TITLE: Electronic Modelling & Simulation of a temperature sensing device

AIM:

1. To perform interfacing of LM35 temperature sensor and simulate the circuit using Proteus simulation software/tool.
2. To sense the current flowing in the circuit and display the output on a LCD.

APPARATUS: Proteus software, Arduino IDE, LM 35 temperature sensor, LCD etc.

THEORY: The LM35 is a popular analog temperature sensor integrated circuit (IC) commonly used in electronic projects to measure temperature. It provides an output voltage proportional to the Celsius temperature. Here are some key points about the LM35:

Accuracy: The LM35 is known for its high accuracy and linear output (10 mV/°C scale factor).

Temperature Range: It typically operates over a range of -55°C to 150°C, although some variations may extend this range.

Output: The output voltage of the LM35 increases linearly with temperature. For example, if the temperature is 25°C, the output voltage would be 250 mV.

Calibration: Since the output is linear, calibration is relatively simple. However, it's always good practice to calibrate it against a known temperature reference if high accuracy is required.

Power Supply: The LM35 operates from a single power supply voltage ranging from 4V to 30V, making it suitable for use in a wide range of applications.

Low Self-Heating: The LM35 has very low self-heating capability, meaning that it doesn't significantly contribute to the temperature it's measuring.

Package: It's available in TO-92, TO-220, and other package types, making it easy to integrate into various circuits.

Applications: Common applications of the LM35 include temperature measurement in electronic equipment, environmental monitoring systems, and industrial control systems.

PROCEDURE:

Interfacing an LM35 temperature sensor with an Arduino is a common and straightforward task. Here's a basic guide to get you started:

Components Needed:

Arduino board (e.g., Arduino Uno, Arduino Nano)

LM35 temperature sensor

Breadboard

Jumper wires

Circuit Connection:

Connect the LM35 sensor:

Connect the LM35's VCC pin to the Arduino's 5V pin.

Connect the LM35's GND pin to the Arduino's GND pin.

Connect the LM35's output pin to any analog input pin on the Arduino (e.g., A0).

OBSERVATION TABLE:

S.No.	Input	Output Temperature

SIMULATION RESULTS: